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PHONOGRAM

A MONTHLY MAGAZINE

DEVOTED TO

THE SCIENCE OF SOUND ..

+AND+

.. RECORDING OF SPEECH.

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THE PHONOGRAM.

Vol. I.]

◁ MAY, 1891. ▷

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THE NORTH AMERICAN PHONOGRAPH CO.

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Cen'l Nebraska	Kearney, Neb.	Western part of State of Nebraska.
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New York	New York, N. Y.	New York State.
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Wyoming	Cheyenne, Wy. Ter.	Wyoming.



A MAGAZINE devoted to all interests connected with the recording of sound, the reproduction and preservation of speech, the Telephone, the Typewriter, and the progress of Electricity.

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Pulitzer Building, Room 87.

NEW YORK.

ADVERTISEMENTS.

THE PHONOGRAM, having special facilities in its circulation through the vast commercial system occupied by the Phonograph, Telephone, and other Electrical Devices, presents an exceptionally valuable advertising medium. The rates are reasonable and will be furnished on application.

CORRESPONDENCE

relating to the Phonograph, Typewriter, or Electricity, in any of their practical applications, is cordially invited, and the coöperation of all electrical thinkers and workers earnestly desired. Clear, concise, well-written articles are especially welcome; and communications, views, news items, local newspaper clippings, or any information likely to interest electricians, will be thankfully received and cheerfully acknowledged.

A Conference of all Phonograph Companies in the United States.

That the convention held by representatives of the interests of the phonograph, in this city on June 16, was of general as well as special importance goes without saying. That body was called upon to frame laws for the government of the association as a whole, devise a system by which the branches of the great organization should conduct their work on a uniform plan, grapple all vexed questions with a determination to bring them to a settlement, and demonstrate to the recalcitrant that in business, as in politics, the will of the majority must prevail.

The organ of these companies sprang into existence with the birth of the year 1891, and

through all vicissitudes has pursued the even tenor of its way, endeavoring to reflect the sentiments of its sponsors and conscientiously fulfill the duties imposed by its patrons. It was with a certain degree of pride therefore that we saluted the large and honorable assemblage to whom it owes its being and for whose use and benefit it labors; and felicitated them upon the progress and growing popularity of the invention upon which their efforts are concentrated.

The PHONOGRAM receives additional evidence of the favor and esteem in which the phonograph is held through correspondents and the reports of journalists in various parts of our country. It is also pleased to state that its own subscription list has been enlarged by names from Liverpool and Hull in England, and towns in Scotland, and even in Australia. No clearer proof of the standard of excellence attained by the PHONOGRAM can be advanced than that of the *unsolicited patronage* of persons having no connection with this magazine or the instrument it represents.

We have a confident belief that the convention will consummate the ends it proposes and give an impetus to the "phonograph system." We recognize the intellectual and commercial capacities of its management and agencies, and entertain a conviction that in working wisely they will achieve further success.

We also trust they will extend to the PHONOGRAM the measure of justice which it deserves. Very few enterprises in this or any other country have been able to maintain a struggle, accomplish a purpose and work out a successful result against such odds.

Placed once upon a substantial basis, the PHONOGRAM has in view a scheme for enlarging its sphere and thereby securing for the phonograph still greater triumphs,

V. H. McRAE.

A Unique Name For an Unparalleled Instrument.

Genius knows no metes—no bounds; disregarding past achievements, spurning obstacles, seeking ever new fields and new victories, it lives only to do and dare.

The gloomy and brooding young Corsican who set out mechanically to win station in an army and for a country not his own, was never daunted, and never swerved till he reached the post of First Consul. When he had grasped that, his ambition and cumulative energy enabled him to obtain whatever his fancy prompted him to desire by the aid of his genius. Crowns were snatched from the heads of kings, armies cut down as the mower cuts the wheat with his scythe, cities burned, nations humiliated. Whatever he aspired to perform he accomplished.

So it is with the American savant, Edison. He has recently contrived a new instrument, the kinetograph, from the old zoetrope and Professor Maybridge's instantaneous photographs of animals in motion. Combining these he has made an apparatus for the purpose of continuously recording motion and reproducing it at will. He will, for instance, take 30 or 40 pictures a second of an acrobat's movements. He proposes to keep a continuous record of a public speaker's motions, using a kinetograph for this purpose, just as he would record the spoken words on a phonograph; and reproduce the two together for the amusement of future generations. The eye of a genius is as alert as the eye of a sentinel.

A Correction.

The article in our last issue on the subject of the Columbia Phonograph Company was erroneously attributed to Mr. E. D. Easton. It was, as a matter of fact, prepared in this office by the editor, on data furnished in part only from Washington. The views expressed as to the effect of the phonograph upon stenographers are our own; as are also the conclusions in the last paragraph, relative to the success of the Columbia Company. The statement that the phono-

graph is used in the Armory of the Washington Light Infantry, was based upon a newspaper clipping which, we now understand, related to a proposed trial.

Obituary.

In the death of Mr. L. Halsey Williams at his home in Leetsdale, Pennsylvania, one week ago, the public at large have lost a well-known business man and the phonograph people have lost one of its most ardent promoters.

Mr. Williams was born in Portsmouth, Ohio, in 1842. In 1847 his parents moved from that place to Cannonsburg.

He was educated at Jefferson College where his father, the Rev. Aaron Williams, held the position of professor.

He did not graduate but left school to join the army when the war broke out. He served with distinction in Knapp's Battery.

After the war Mr. Williams settled in Pittsburgh and made a reputation for himself as the assignee for the bankrupt firm of Ira B. McVey & Co.

He succeeded Jas. Kennedy as financial editor of the *Commercial* which position he held for several years, afterwards organizing the St. Clair Banking Company, which formed the Fifth National Bank.

He was for a long time cashier of this bank.

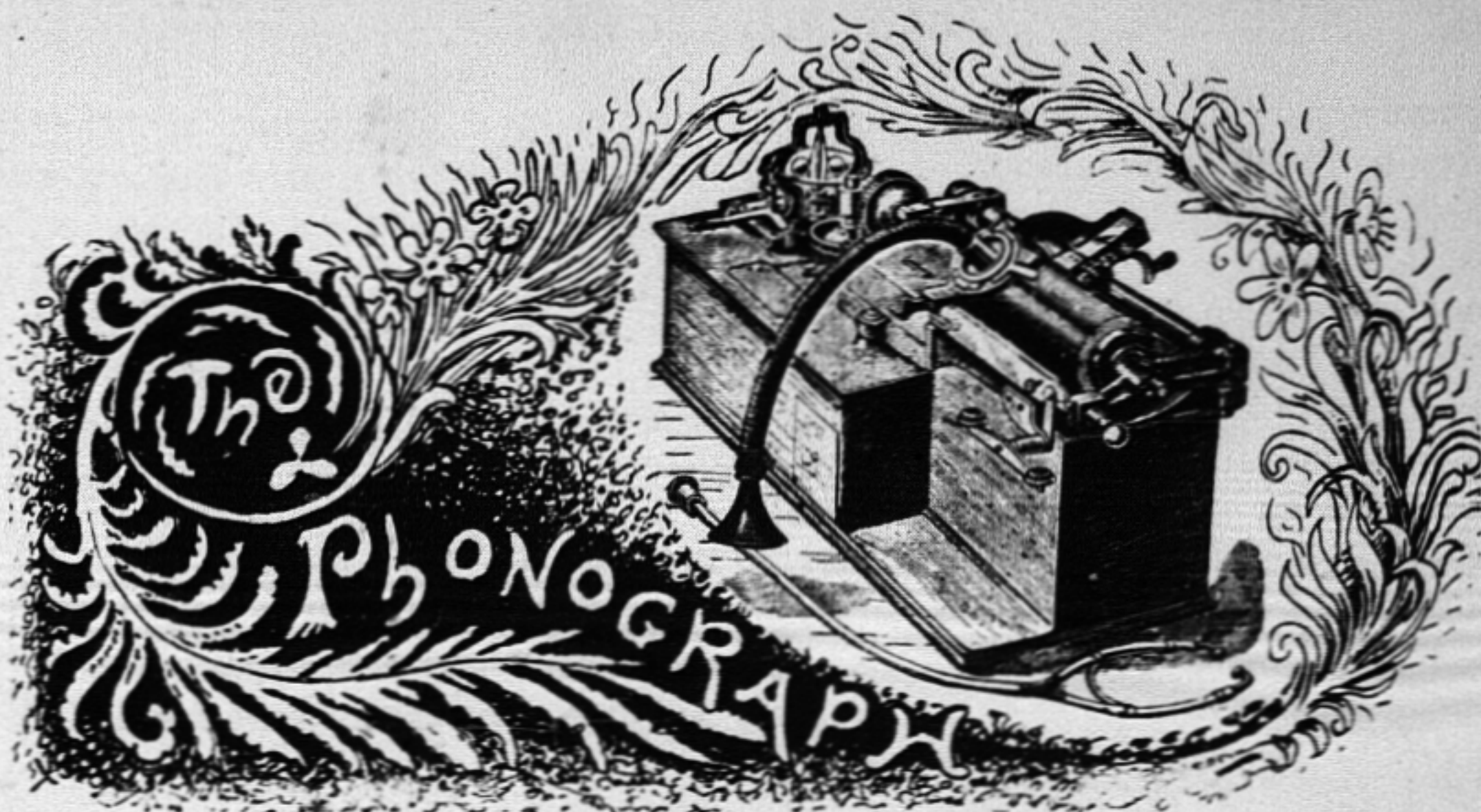
About four years ago he became general manager of the Bridgewater Gas Company, but his health failing, he was compelled to quit business and take a trip to Europe.

He was vice-president of the Eastern Pennsylvania Phonograph Company and was largely interested in the West Pennsylvania Phonograph Company, and the North American Phonograph Company.

He took a very active interest in this enterprise.

At the time of his death he was a director in the Bridgewater Gas Company, secretary and treasurer of the New Castle Water Company, a director in the Central District Printing and Telephone Company, treasurer of the Mercantile Library Hall Company and a director of the Fifth National Bank.

He will be greatly missed in phonograph circles as well as in banking circles, where he was said to have been known as the best posted man on banking and commercial law in Pennsylvania.



The Phonograph-Graphophone.

BY GEO. B. MOTHERAL.

In speaking about the Phonograph-Graphophone before a body of stenographers it is my intention to refer to it only in the light of its usefulness to stenographers, yet I feel that I am handicapped by the adverse opinions formed in the minds of many of the stenographers in this country in regard to that machine. These adverse opinions have been created, in the main, by the claims of the too enthusiastic admirers of the Phonograph-Graphophone. However, this is a matter that can be easily understood, as it is the custom of inventors in this country, in any new venture, to claim not only what they can lay their hands on, but everything in sight, and thus the stenographer, who is accused of being mechanical in the operation of his profession, is threatened with having his position filled by a mere machine.

This is a great country. In no other country has there been so careful a cultivation of the inventive faculty, and we are now living in what is commonly called the "Mechanical Age." Mr. Gladstone, in a recent article, says "America makes no scruple to cheapen

everything in which labor is concerned, and, therefore, shows no mercy upon labor, but displaces it right and left. Why? Only because this is the road to national wealth," and national wealth means individual prosperity.

I merely refer to this in order to show that the tendency of the age is well known to be towards the invention of labor-saving appliances, and to give my views of the result of such inventions. Is it not a fact that all labor-saving inventions that have been introduced to and adopted by the public in the present century have increased the earning power of skilled labor, and, consequently, have increased the salary received by the laborer? Is it not a fact that, although "Mechanical devices" have been invented to take the place of the skilled laborer, where such devices are used there is created a higher class of skilled laborers—laborers, call them by whatever name you will, who receive larger salaries and hold more responsible positions than the laborers who did the work before such contrivances were invented?

Several years ago a mechanical device was invented which has proven a great boon to stenographers and to the public in general. By its use the business

community of this country alone has saved hundreds of thousands of dollars which otherwise would have gone to a vast army of men and women who would have been writing short-hand for a living. You might ask me what manner of device is this, that thus diverts so much money from the people of this country; what does it do, and what advantage has it over these thousands of people who might have been earning fair salaries writing shorthand in the various business offices of this country? In reply to your question I would say that I refer to the "Typewriter," a mechanical device invented for the purpose of aiding business men and stenographers in attending to all business that requires the transmission of words upon paper.

This mechanical device, the typewriter, enables a stenographer or any person operating the machine, to write in a day twice or three times as much matter as he could write with a pen in the old-fashioned way. It stands to reason that if a stenographer, with the aid of a typewriter, can now turn out three times as much work as he could formerly, when he was compelled to write out his notes in longhand, that the typewriter has displaced two out of every three stenographers, and if a person is to believe the advertisements inserted in the newspapers and published in pamphlet form by the typewriter manufacturers of the speed that is attainable on the typewriter, and that there is practically no limit, I do not see where this thing will end. Here, then, is a machine that is displacing stenographers right and left. Since the invention of the typewriter a stenographer can do three times as much work in a day as he could formerly. One stenographer is taken and two are left. Yet the question of

whether the "Typewriter" is beneficial to the stenographer or not has been discussed in the rooms of this association, and, also, in the rooms of all other stenographic associations in this country, and the typewriter has been declared a great boon to the stenographer, and you will often hear the expression that "The typewriter is the right hand of the stenographer." Why is this? Because it enables the stenographer to turn out more work in a given time, thereby increasing his earning power, and, consequently, increasing the amount of money which he receives for his labor. It also for a while kept out incompetent stenographers, but the demand for shorthand and typewriting has increased, and this has caused a mushroom growth of stenographers in order to supply the wants of the public. Every business man must have his stenographer and typewriter operator, and these so-called "Shorthand Schools" are turning out incompetent stenographers for them at the rate of thousands every three months, for three months is the limit of their course, and these schools guarantee all students a speed of 150 words a minute in that time.

The time has come when another mechanical device is necessary to weed out these incompetent stenographers, whose work is a disgrace to the profession; and the thanks of the profession are due to Messrs. Edison, Bell and Taintor who have for that purpose introduced the other hand of the stenographer, that is, "The Phonograph-Graphophone."

The Phonograph-Graphophone is, as its name indicates, a recorder and reproducer of sounds. It is the invention of Mr. Charles Sumner Tainter, and is the result of many years' experimenting and the subject of many patents, several of which were issued in May, 1886. The

machine is an exceedingly simple thing, and any typewriter operator of ordinary ability can operate the Phonograph-Graphophone in a very short time.

Well known stenographers throughout the country have testified that the Phonograph-Graphophone will receive any and all sounds made in the funnel of the speaking tube, record the same on the cylinder, and then reproduce it for you at your pleasure as often as you like.

Prominent stenographers all over the country have testified that they have tried the Phonograph-Graphophone; that they have dictated matter full of technical and unusual terms to it, and that by the use of the Phonograph-Graphophone they can turn out at least twice as much copy per day as they ever could before.

With this machine the stenographer can turn out twice or three times as much work as he could have done heretofore in the old way of dictating either to a typewriter operator or transcribing his notes himself upon the typewriter, and in this way he will increase the amount of work he can do. What business man will hire incompetent men or women when he can get a competent one for the same money? And with the aid of the Phonograph-Graphophone, a good stenographer, who can read his notes, will be able to do so much more work that he will be able to compete with the great number of incompetent stenographers in the field, by reason of the fact that he can turn out so much more work in a given time.

I therefore contend that the Phonograph-Graphophone is a great boon to the stenographer, for like the typewriter, it will increase the amount of work that he can turn out in a given time, and in that way increase his earning power, and this makes the pro-

fession more remunerative. It will weed out the incompetent stenographers, give a better standing to the profession, and by reason of the increased demand for competent stenographers, rid the country of these three months shorthand schools, "a consummation most devoutly to be wished for."

Cable Steamers Equipped With the Phonograph.

The large cable steamers lying in the Boston harbor will probably be equipped with the Phonograph. The captain is required to keep a record of all commands and instructions given by him while on the bridge of the steamer. The bridge is often a wet, foggy and dripping place, and the keeping of this record in a storm is almost an impossibility. It is proposed placing a phonograph in the cabin and running a speaking tube from the captain's post on the bridge down to the phonograph. An electric switch controlled from the bridge will set the cylinder turning whenever the captain repeats his orders down the tube.

The Phonograph as a Reading Clerk.

An innovation was introduced by the Universalist Social Union House. When in the business meeting it was time for the reading of the records of the last meeting, a phonograph was brought forward and the proceedings were ground out from the machine.

Mr. Gibbs made a short address on "The Demands of our Modern Minister," and the remainder of the evening was spent in listening to the phonograph as manipulated by Mr. Childs. It was announced that the annual festival would be a field day on May 25, which Governor Russell would probably attend and to which Mayor Matthews, Speaker Barrett, Rev. Dr. Gunnison, of Worcester, and Rev. Dr. Hamilton of Pawtucket, had accepted invitations.

Unsolicited Testimonial From an Expert Stenographer.

If the editor will give me a little space, I would like to give a word of testimony for the phonograph. I have been intending to write an article on the benefits to be derived by having a phonograph in the office, for some time, in reply to an article written by Mr. W. A.

only a question of time when no office will be complete without the phonograph.

The greatest advantage to be derived from the use of the machine, is in the saving of time, and it seems to be the chief characteristic of business principles to get as much work out in the least time as possible. Where a stenographer is employed the dictator and



Shaw on "Stenography vs. Phonograph." A copy of the PHONOGRAM came under my notice recently, and I thought I would like to speak a word of praise, not that I have not always done so, but not in a public way.

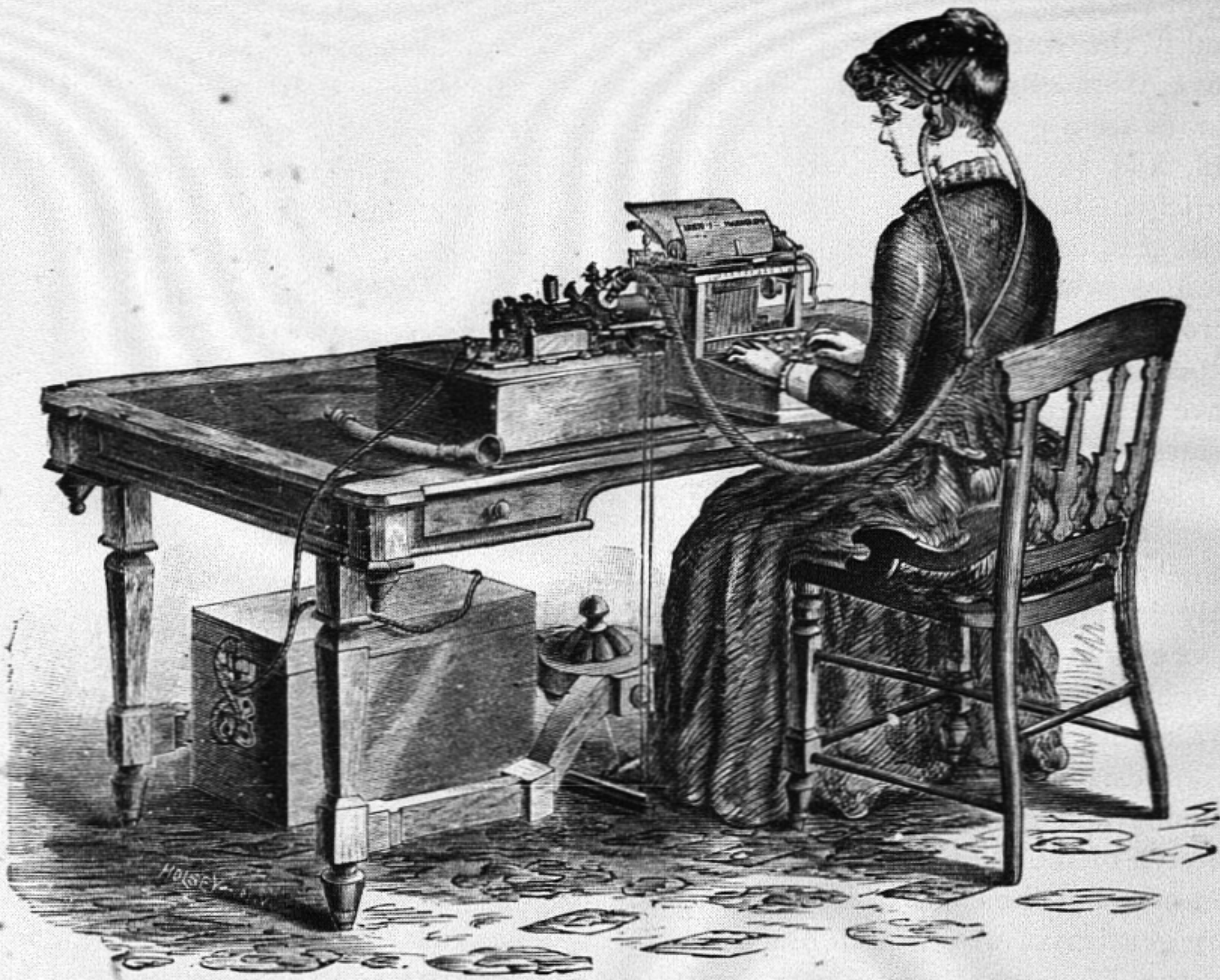
We have used one in the office in which I am engaged ever since the Phonograph Company was established in this city and from the very beginning we have had very little trouble with it; it works like a charm and we would not be without it; and as no office is complete without a typewriting machine, I think it is

dictatee are both employed at the one time at the same work, whereas, if the phonograph were used, the stenographer, or rather the typewriter, could be engaged at something else until the cylinders were ready to be transcribed. We have two phonographs, and while one is dictating, the typewriter can be taking the letters from the other machine. Then the phonograph not only saves time but money. Where you would have to pay a stenographer from \$12 to \$15 a week, you can get a first-class typewriter for \$10.

Then there is another way in which it saves time: the merchant or professional man who resides out of the city, and cannot get to the office very early, can stay a few minutes after closing and dictate a number of cylinders for the typewriter to transcribe in the morning. If a stenographer is asked to stay overtime to take letters, if the business is rushed, he has to be paid extra.

last issue of the PHONOGRAM, that the majority of the people think it only a toy to be used for amusement at the sea shore in the summer, or entertainments in winter. It is surprising how few people have any idea of what the machine is like.

I could go on sounding the praises of the "wonderful but simple machine," but am afraid that I have now taken too



I am glad the PHONOGRAM has been started; I hope it has come to stay; it will go a great ways in getting people interested in the phonograph. I do not think the press in general gives enough attention to it; other modern inventions seem to claim a great deal of their time, but one very seldom sees anything about the phonograph aside from a funny paragraph now and then, and it really seems to be a fact, as some one has said in the

much space from some one else.

CARRIE E. SMITH,
With Shriver, Bartlett & Co.,
Philadelphia, Pa.

The possibilities of the phonograph in church are great. A minister may speak into the receiver of the instrument at his leisure, and in case of sickness or absence, supply his congregation with sermons *ad libitum*.

THE NEW AUTOMATIC PHONOGRAPH IN NEW ENGLAND.

In New England territory the interests of the Phonograph are still on the increase. During the past week the New England Company have received 25 of the new Automatic Slot Machines, and in the course of a day or so, will have them eligibly placed. These machines are a great improvement upon the old, and the New England Company anticipate brilliant results from them in this respect. During the summer months while the beach season is on, throughout their entire territory, they expect to do a very large business and have between 300 and 400 of these machines out.

The New England Company have also been making, during the past month, some magnificent records, finer probably in many respects than any that have ever been turned out by any phonographic company.

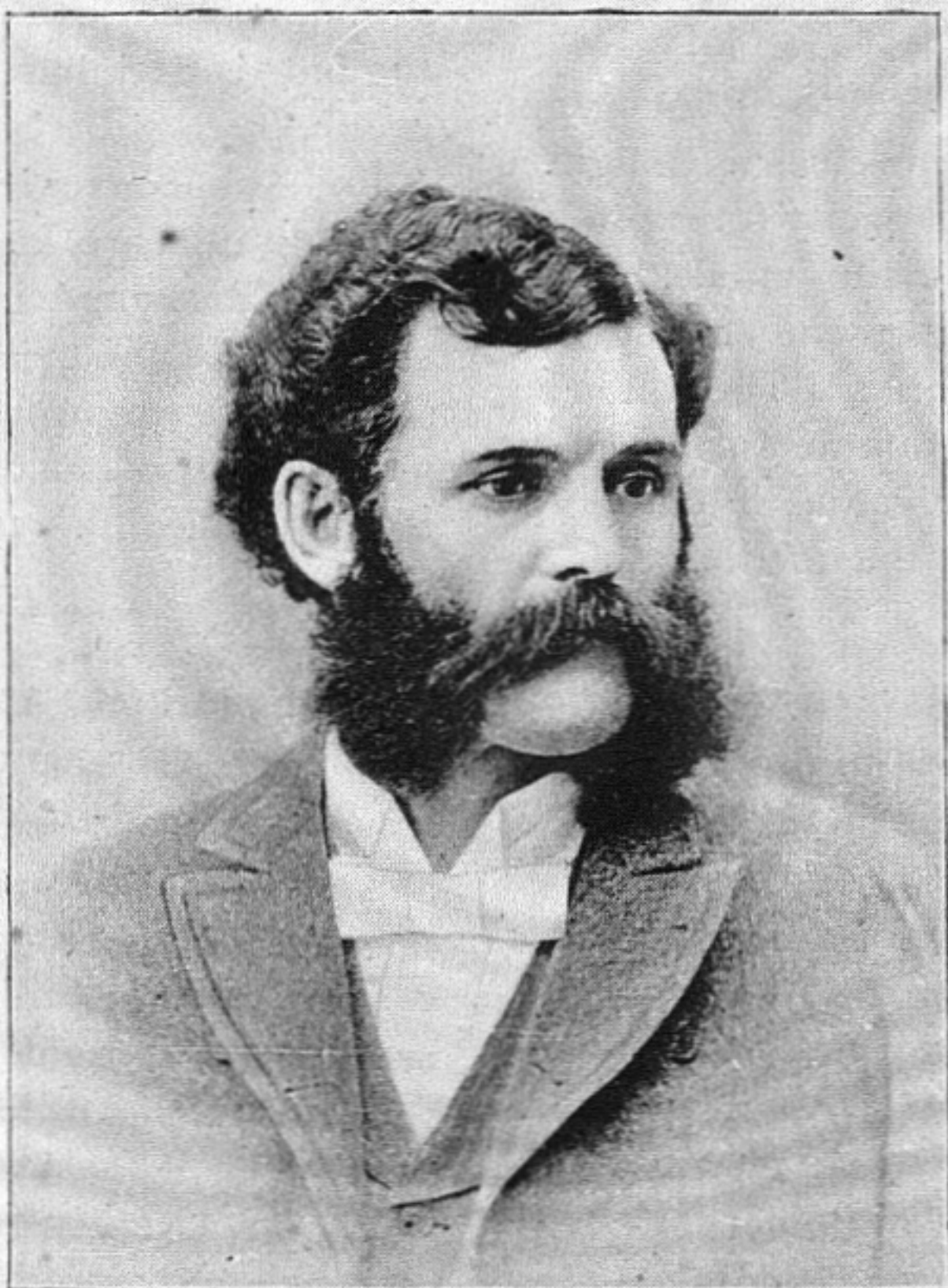
They have also had their share of exhibitions. At an exhibition of the Phonograph given in the vestry of the Church of the Disciples, Colonel Sampson asked at the close of the exhibition, any gentleman who would like to speak to the Phonograph and have his own voice reproduced for the benefit of the audience, to come to the machine and talk to it; and a gentleman came forward and spoke to the Phonograph in the following lines, which are so good that we reproduce them for the benefit of our readers:

"Oh Phonograph! Oh Phonograph!
You are enough to make us laugh.
You beat the smartest mocking bird,
That tropic groves have ever heard..
No echo from a mountain wall
Could ever pitch so fair a ball;
No politician North or South,
Could ever show so wide a mouth.
And could you *think* as well as bray
Why, we might lie in bed all day;
But you're no better than the rest
You only mimic at the best;
For if one mutters, then you mutter,
And if one stutters, then you stutter.
If Edison will only teach
You to correct your faulty speech
And when we make a foolish noise,
Straight answer back
With wisdom's voice,
That will be something to invent,
And we will make him President."

In regard to the musical cylinders, we have to acknowledge the receipt of one of the band cylinders made by the New England Company, and we must say that it is very superior.

The New England Company intend in the course of the next ten days to issue some novelties in the way of records for automatic machines, such as have not yet been put upon the market. They have been fitting up devices for this purpose, and shortly will send samples out to all the companies. Everything seems to be prosperous in this district.





MAJOR A. W. CLANCY.

PRESIDENT NATIONAL PHONOGRAPH ASSOCIATION HELD IN NEW YORK CITY, JUNE 16, 1891.

A Novel Musical Programme.

At a regular monthly meeting of the stenographers of Pittsburgh, a new departure was taken by introducing the Phonograph to render the music for the occasion. The exhibition was given by the West Pennsylvania Phonograph Company, their efficient manager, Mr. Henry F. Gilg, having charge of this part of the entertainment.

The stenographers are all coming forward in support of the Phonograph and all express themselves as delighted with its wonderful capacity for reproducing the most exquisite music. Some 200 members were present and spent a most enjoyable evening. The following is the musical programme furnished by the West Pennsylvania Phonograph Company, through the medium of the Phonograph.

THURSDAY EVENING, MAY 14, 1891, AT EIGHT
O CLOCK,

412 Wood Street, Pittsburgh, Pa.

PROGRAMME.**MUSIC**

1. { Tannhauser March.....Gernert's Orchestra
{ Tariff Galop.....Cappa's Band

PAPER

2. Amplius.....E. E. Clark

MUSIC.

3. { Arbuckleian Polka Cornet Solo.....
{ Seventh Regiment Band, N. Y.
{ Whistling Coon...Song by G. W. Johnson

PAPER.

4. Reporting in the South after the War
A. M. Martin

MUSIC.

5. { Carillon Galop, United States Marine Band
{ Laughing Song.....George W. Johnson

PAPER.

6. Blunders.....H. M. Kuester

MUSIC.

7. { Razzle Dazzle.....Third Artillery Band
{ In Absence.....Columbia Quartette

PAPER.

8. The Phonograph.....H. F. Gilg

MUSIC.

9. Fiorella Waltz.....Gernert's Orchestra

A New Way to Speculate in Stocks.

The new public Stock Exchange which was incorporated last December in San Francisco, introduced the novel method of stock buying and selling by means of the phonograph. According to the by-laws, "stocks may be bought and sold by oral expression by the re-announcement of orders on a phonograph." The instrument used to make the bids is designated "the main phonograph."

For the convenience of customers, phonographs are kept in rooms adjoining the exchange in which orders are spoken, and the cylinders are sent to the "main phonograph" so that the announcement of such bids may be made to the public.

A Novel and Useful Attachment to the Phonograph.

An automatic foot attachment has just been placed on the phonograph which renders it much more convenient for typewriters. By simply pressing the foot on a treadle the arm of the diaphragm is thrown back in position to catch the last words of the preceding sentence. If the operator should in transcribing lose a portion of the sentence he can immediately adjust the diaphragm on the wax cylinder by a pressure of the foot.

Mr. Rice, the inventor, who is connected with the Mergenthaler Linotype Company, has also invented and made application in the Patent Office, for a bell and gauge attachment on the phonograph, which serves to place the needle in the right position before starting, and to give warning before the needle is off the cylinders.

GIVE EVERY FAMILY A CHANCE TO USE THE PHONOGRAPH.

CHAS. F. SOUTHARD.

When a year ago I suggested the idea of inviting the Hon. W. E. Gladstone to send a phonogram to be reproduced at a mass meeting of Mutual Building and Loan Associations at Cooper Union, I was ridiculed.

When the request was made, however, the "Grand Old Man" readily acquiesced and sent his thrilling voice three thousand miles to be listened to for the first time in America.

General Tecumseh Sherman, who lived in the hearts of his countrymen as the "Grand Old Man" of the new world, presided at the meeting called for the purpose of listening to the words of the twice ex-Premier of Great Britain, and sent in return his words of congratulation to the great English Commoner.

And this was all made possible through the wonderful phonograph.

And this suggests the future great mission of this remarkable invention.

Having put the instrument to a practical use for nearly two years, I am prepared to say that its mission is far beyond that of a toy.

I have proven its usefulness in subduing an angry crowd of money depositors and saving the institution.

With its aid I have succeeded in inducing hundreds of people to commence habits of saving and building homes.

But the true mission of the phonograph, in my humble estimation, is as a home educator.

When the several companies shall manufacture them cheap enough to make it possible for every family to possess one, then will its great mission have been attained and its usefulness developed.

The children will then recite their lessons to the phonograph and learn them easily and thoroughly.

Then will they learn to speak fluently, grammatically and elegantly.

Then will they develop their vocal organs, inspired to do so by hearing their own voices reproduced.

Then will they learn to play musical instruments, and practice will become a pleasure, as they will be able to correct errors, always having their efforts photographed from.

Then will they love to improvise and create music, being able to imprison upon the yielding wax the sweet sounds born within themselves.

These are my ideals of the multifarious uses of the phonograph.

Let the companies place them in the homes!

Also let them secure the best talent of every kind, and furnish the frozen music to all at prices within the reach of even poor people.

And the great law of unselfishness will create for the promoters, millions, where only thousands are now earned.

"And Thomas A. Edison is still wizard at Menlo Park."

Language Instruction by Means of the Phonograph.

Dr. Richard S. Rosenthal has had the conversational course of the Meisterchaft system in each language recorded on 24 phonograph cylinders. These are furnished in French, German, Spanish or Italian, with the privilege of corresponding with the Doctor for a fixed charge. A provision has been made for classes of ten, in the shape of a phonograph with a ten-way hearing tube and ten sets of books and lesson cylinders.

The Meisterchaft system is universally popular as an easy road for every day conversation. It is claimed that 550,000 copies of the book in this system have been issued in the past 14 years. At the Glen Echo Chautauqua, which by reason of its close proximity to Washington promises to be in great favor, Dr. Rosenthal is to have a branch of his highly popular language club.

Language teaching on the phonograph was adopted in Washington, owing to the presence of so many distinguished representatives of foreign nations, who are devoted to the study of languages. In that city foreign languages are spoken with the greatest accuracy and cultivation.

Buffalo, New York and other large cities are coming to the front in this direction, and its success in Washington will doubtless stimulate others interested in language instruction to introduce this novel method of self culture. With 31 State Companies, and each company with many branches, there being ten branches in the State of New York alone, the North American Phonograph Company cannot yet keep up with the demand for machines.

Phonograph Records in Health and Disease.

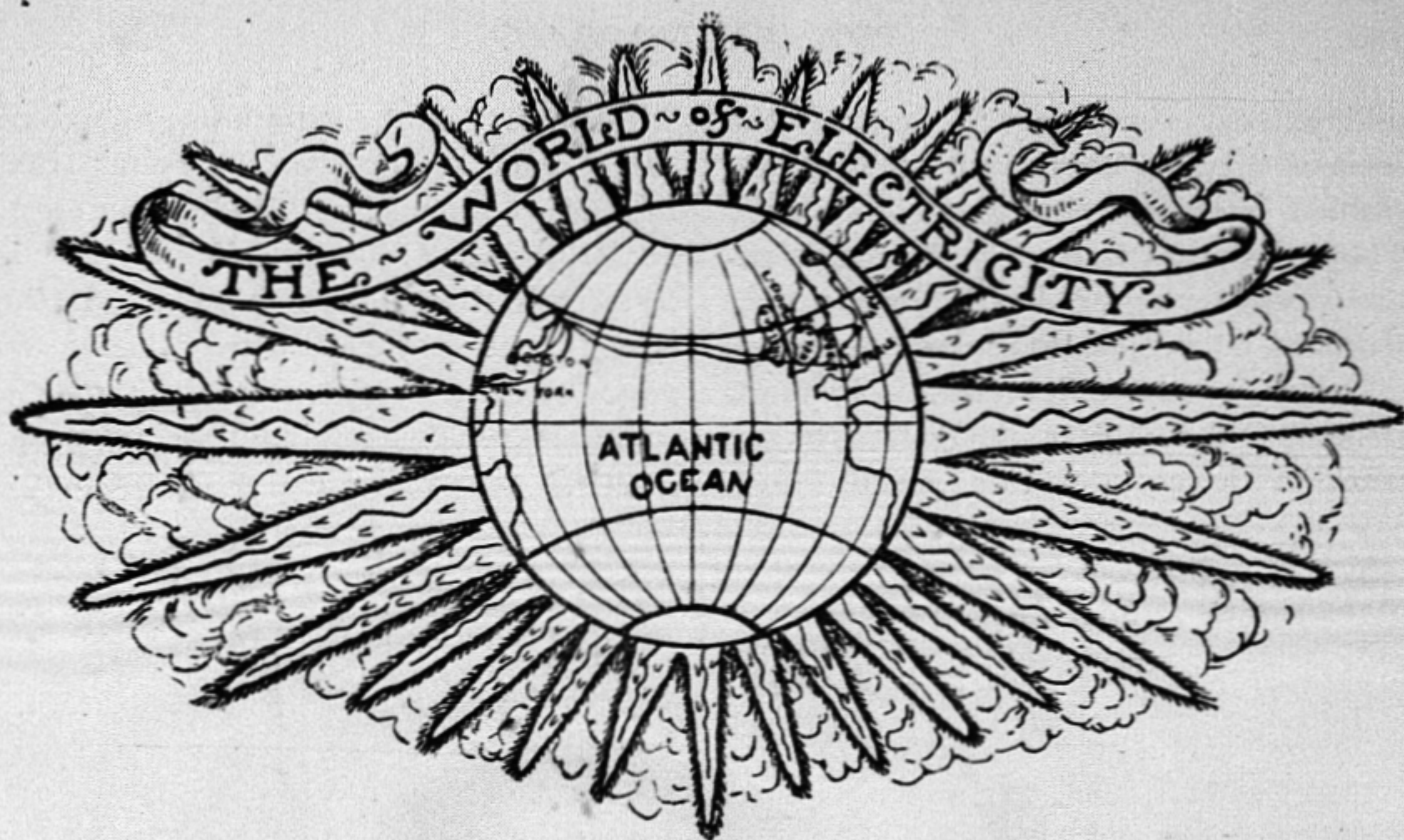
We made mention in the April number of the PHONOGRAM that Dr. J. Mount Bleyer, a New York physician, would read an essay on "The Phonograph and Micro-Graphophone in Medical and Other Sciences."

Dr. Bleyer has been making a collection of voices for nearly five years and now has fully 500 specimens, which can be heard at any time upon the phonograph. Dr. Bleyer makes a specialty of diseases of the throat, lungs, and respiratory organs, and he uses the phonograph solely for the purpose of ascertaining the practical value of this invention in regard to medical and other sciences.

The voices are all taken on waxen cylinders, five inches long by three inches in diameter, and include those of such famous singers as Julius Perotti, the famous tenor of the Metropolitan Opera House, and also Carl Streitmann. The latter sent a message to his family who reside in Berlin, on a phonograph cylinder, which was received with great wonder and delight.

The phonograph has now been so perfected that it is capable of faithfully representing every word, syllable, vowel, consonant, aspirant or, indeed, sounds of any kind. In medical science it is destined to exert a very great influence; in fact its value in this branch is barely beginning to be appreciated.

After many years of experimentation, the phonograph can be made to record the symptoms usual in diseases of the respiratory organs in both normal and abnormal states. Phonograms of tenors, baritones and basses may be produced, the voices studied as to the different shades of tone and quality, and be found of value in clinical demonstrations.



THE RATIONALE OF INVENTION.

BY FRANK M. DEEMS, M.D., PH D.

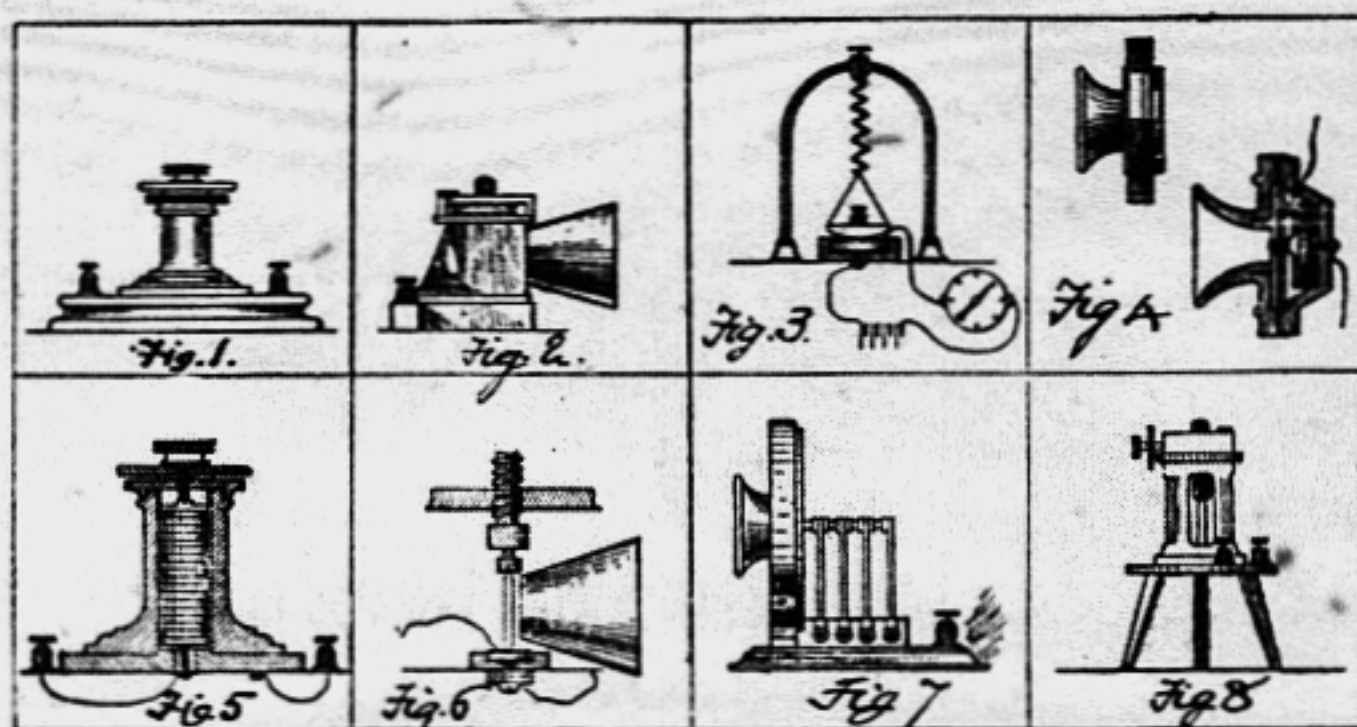
It has been a part of the writer's recent experience to have been a member of Mr. Edison's experimental staff for a period of more than two years; and the following thoughts on invention in general and especially whatever refers to Mr. Edison in particular, are based on personal observation. The notion that great inventions of creative minds, in any department of human endeavor, have come into existence as the products of some happy thought, some lucky accident or some haphazard piece of good fortune, is one of the pure fictions of utter laziness, or the idle dream of ignorant indolence. It is with astonishment, therefore, that we find Samuel Butler, the learned and brilliant author of that incomparably witty and satirical poem *Hudibras*, giving utterance to such lines as these:

"All the inventions that the world contains,
Were not by reason first found out, nor brains;
But passed for theirs who had the luck to light
Upon them by mistake or oversight."

A most delusive notion, my witty poet, and contrary to all recorded experience. If the rich, abundant biographical literature of modern times teaches us anything that is beyond dispute, it is that all original production involves not only the severest strain of the human faculties, the most violent and exhaustive form of brain-work, but, also, that the great discoveries and inventions of science are reserved for those alone who go forth prepared to search them out and run them down. For the process of inventing more closely resembles a grand hunt for big game than anything else that occurs to the writer. But, it is exactly as *Hudibras* says it is not; it is by reason and by brains alone that great discoveries are made. They never chance, by mistake or oversight, to spring from the "straitened forehead of the fool." They are the rewards of reason rightly directed, reinforced by ample knowledge and guided and corrected by actual and in-

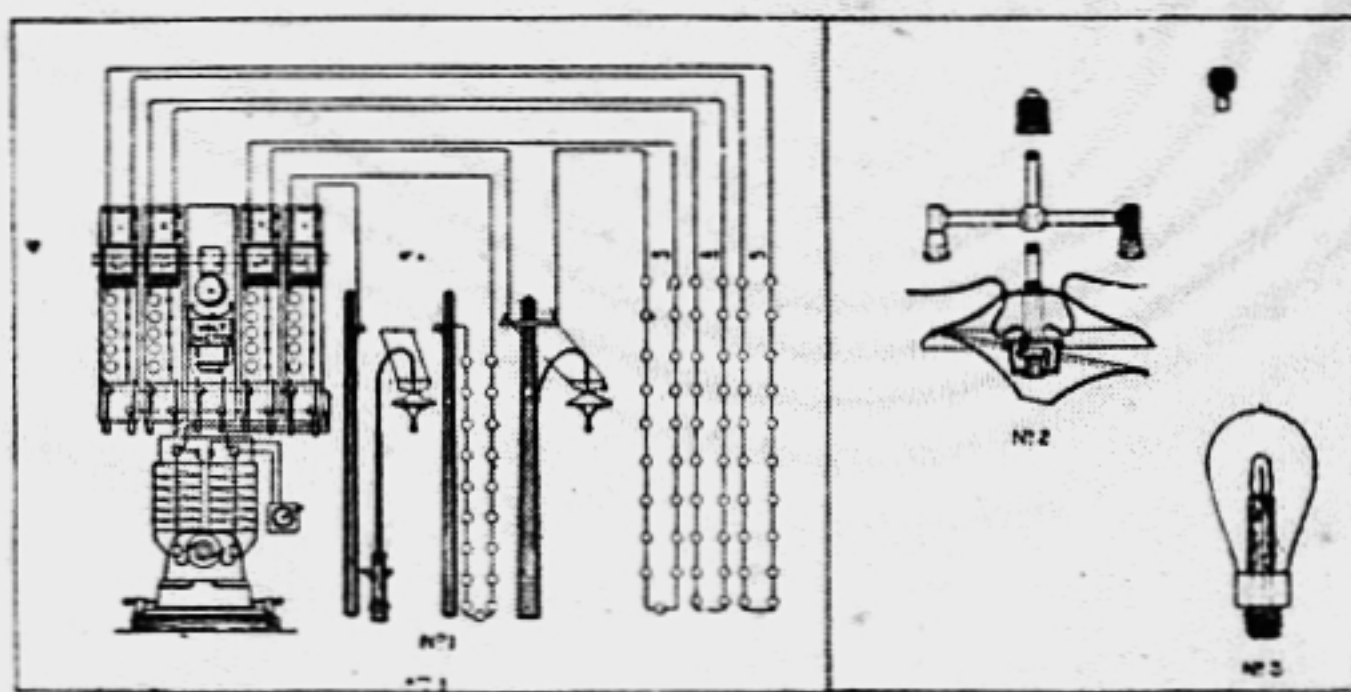
telligent experimenting. They are the fruit of the long continued focusing of a trained intellect upon given problems. They are the outcome of undivided attention, unwearying application, patient researches, innumerable failures, but always of more innumerable trials. No more striking and complete illustrations of the truth of these statements can be found

will soon reach the astounding figure of *one thousand!* He is not very far from that figure now. As a single example of Mr. Edison's prodigious industry, it is on record that, during his work on the telephone alone he filled more than 3,000 pages of closely written notes. Great as is his marvelous genius for inventing, even *his* discoveries are not, perchance,



than those furnished by the life and the inventions of that "prince of experimenters," Thomas A. Edison. Here is a man who began poor, who became a phenomenal reader, even in his boyhood a hard thinker, an indefatigable worker, and a ceaseless experimenter. The speci-

off-hand victories of mind over matter. No more so than were Napoleon's victories the outcome of luck or fortuitous circumstances. Goethe said: "Genius is only another word for industry." Edison is industry itself incarnate, and a great deal else besides.



fications of his patents already fill more than three of the large-sized volumes of the Patent Office Reports and though he has just passed his forty-fourth birthday (he was born February 11, 1847) he has already taken out more patents than any man that ever lived. If he continues at the rate he has been going during the past few years, the number of his patents

The only "open sesame" of the secret treasure-caves of nature, is the triple combination of study, work and brains. Nor do great inventions spring forth, Minerva-like, full-grown from their creator's hands; they are most laboriously wrought out behind the broad brow of genius. Had Thomas A. Edison sat down and waited for luck to light upon

his great inventions, had he deluded himself with the idea that earnest persevering, preliminary study was unnecessary, that geniuses do not need to toil and drudge, that they can create and dictate their own laws, he never would have been heard of beyond the smoke of his father's chimney, in little Milan by the Erie Lakeside. No, indeed, *Hudibras*, not by that way, my most witty but mistaken poet, was the quadruplex telegraph given to the world, or the incandescent light set aglow; not by that way was the long-distance telephone made to whisper its messages across leagues of intervening space; not by that way was the phonograph, that wonder-working tone-photographer, made a beautiful and useful fact, wherewith music, winged, fleeting, evanescent melody, is caught and kept and like a song-bird caged, is ever ready to give forth again the sweetest strains that it has ever heard. Nor was it by luck or chance that he invented the supersensitive tasimeter, by which the millionth part of one degree of heat can be accurately measured, even though it has had to journey for ages through interstellar spaces—cold and dark beyond conception—from some remotest, faintly glimmering star, dimly visible with mightiest telescope, on the ultimate confines of the universe.

No, *Hudibras*, these things do not come by chance or luck, but are discovered from the mastheads of science by the vigilant eyes of genius, trebly clarified by experience and by those patient watchers who can outwatch the very stars themselves. In our days, as in the days that have been, there are no royal paths to learning, no macadamized roads that run to nature's *El Dorado*. In our day inventing has become a regular, definite profession and various is the equip-

ment therefor required. Besides his exceptional inborn aptitude, Thomas A. Edison has equipped himself for his high and noble profession more completely than any other inventor. If one will follow his career from boyhood, one will see him toiling with irresistible ardor, with indomitable perseverance and with such a dogged stubbornness of purpose as will amaze one at the powers of endurance of the human mind and body; will see him in his youth, in his early manhood and in his present prime of life, wearing out the very patience of nature herself, by day and by night, sleeping only for a few brief hours in the twenty-four, such a toiler as has not been since the days of Napoleon.

As we opened with the poet, so with the poet we will close, for a truer if not quite so witty a one, has spoken later and more fitting words on this subject and we will listen and do well to believe when our own Longfellow tells us that:

"The heights by great men reached and kept
Were not attained by sudden flight;
But they, while their companions slept,
Were toiling upward in the night."

The Past a Lantern to the Present.

The American Institute of Electrical Engineers held a meeting at the Electric Club on May 21st. It was a field day among them, because of the varied forms of entertainment presented on the occasion. Hitherto, novel sorts of mechanism and new applications of electricity, manifesting the exhaustless properties of this force, have engaged the attention of members of the association and visitors; but on that day there was a departure from established routine.

Americans have a natural proclivity for dealing in futures; it was this tendency that led to the discovery and settlement of the new world. But they are

beginning to realize that the past is a lantern to the present and future.

Therefore, the visiting electricians had a surprise offered to them by their entertainers of the Electric Club, whose happy thought it was to gather a collection of ancient books and mechanical devices written and contrived by the scientists of past ages.

It was a loan exhibition, and all present were astonished at the variety and extent of the display of objects included.

There were treatises on electricity and kindred forces in different languages, and the range of mechanism was especially extensive, exciting wonder and interest in the beholders.

Those who have read the PHONOGRAM with attention since its inception, will now, perhaps, be inclined to credit it with some degree of enterprise and editorial skill in entering upon the line of presenting early thought and effort in electrical matters to its readers.

Mr. W. J. Hammer sent a fine exhibit of his valuable collection of lamps, and Mr. Louis Steiringer showed a variety of incandescent lamp sockets. Edison's alternating current transformer and Thomas Davenport's electric motor were objects of great interest.

The collection of Mr. A. B. Chandler contained letters, records and other manuscripts connected with the telegraph service during the war of the Southern and Northern sections of the United States.

The literature of electricity, as contained in the volumes kindly loaned to the Electric Club at the reception given to the members of the American Institute of Electrical Engineers, was found by the visitors to be most successful and interesting.

This exhibit filled two rows of show cases running through the centre of the room and was furnished by Mr. Park Benjamin. Mr. T. C. Martin loaned many valuable historical papers, among which were several manuscripts of Morse.

Among rare books loaned by the University of the City of New York was placed the remains of the battery used by Prof. Morse in sending the first message—which he did with his own hand.

Mr. W. Stanley, Jr., loaned the original transformer and alternator used for the parallel distribution of alternating currents.

Mr. Edison's New Invention in Electrical Photography.

A dispatch from Chicago, says, Mr. Edison has an Electrical novelty in store for the Columbian Exposition. He says, "my intention is to have such a happy combination of Photography and Electricity, that a man can sit in his own parlor and see depicted upon a curtain, the forms of the players in opera upon a distinct stage, and to hear their voices." Each muscle of the singer's face will be seen to work, the color of his attire will be exactly reproduced; and the strides and poses will be as natural as life. This system applies to prize fights, horse racing, etc., the whole scene being truthfully transferred. Mr. Edison says that he makes 46 photographs a second on this moving sheet, and by exhibiting this sheet moving at the same rate of speed, the scene is exactly reproduced.

When this statement was made by him several years ago, people ridiculed the scheme. Mr. Edison, however, kept still. He was working on this idea quietly, and no one but his assistants in the big laboratory at Orange knew

anything about what was going on. He finally established the "base principle" and, having acquired that, he proved that completion was a mere matter of detail. Every invention he has ever made has proved this a fact.

The first exhibition of this latest discovery was given before the Convention of Women's Clubs of America. One hundred and forty-seven members of the Club were present and were delighted and surprised at the marvelous picture before them.

They saw, through an aperture in a pine box standing on the floor, the picture of a man. It bowed and smiled, and took off its hat naturally and gracefully. Every motion was perfect, without a hitch or a jerk. The manner in which the machine works is interesting. When it is desired to produce opera, a phonograph and kinetograph are placed close together on a table, back of the orchestra, each machine having a capacity for 30 minutes' continuous work. The two machines work simultaneously, taking photographs and recording motion at the rate of 46 pictures a minute.

At a regular meeting of the Franklin Experimental Club, Prof. C. Sonn delivered a very interesting lecture on Seismology, or the "Phenomena of Earthquake Disturbances," and methods of studying the same.

The lecture was illustrated by magic lantern views of the most important earthquakes and their various effects in Japan, Sandwich Islands, Charleston and elsewhere.

Prof. Sonn also demonstrated the electrical methods employed in the study of the various disturbances and the number and character of the movements.

The President of the club exhibited samples of lava and earthquake souvenirs collected at Herculaneum, Pompeii and Island of Ischia.

Election of Officers.

At the meeting of the American Institute of Electrical Engineers, held May 19th, 20th and 21st, at the Institute headquarters, No. 12 West Thirty-first street, New York, the election of officers took place and the following gentlemen were elected:

President, Prof. A. Graham Bell; Vice-Presidents, Thomas D. Lockwood, Carl Hering, O. T. Crosby, W. J. Hammer; Managers, Dr. Louis Bell, Herbert L. Webb, A. G. Compton, James Hamblet.

Interesting papers were read by Prof. Crocker, of New York, and Dr. E. L. Nicholls, of Cornell University. In the afternoon papers were read by Mr. Carl Hering, of Philadelphia, and Mr. Frederick Perrine, D. Sc.

At the evening session an interesting lecture was delivered at Columbia College by Mr. Nikola Tesla, which was graced by the presence of many ladies, also the New York Electrical Society and the Electrical section of the Brooklyn Institute.

At a later meeting, papers were read by Prof. Moler, of Cornell University, and Mr. Frank Sprague and others. The latter proposed a plan for the "electrical equipment of the coming Rapid Transit System of New York."

New York Rapid Transit System.

The Report of the above mentioned Commission sets forth the plan proposed to be as follows, for the west side: There are to be four tracks on an underground road, two of which will be used for express service and two for way trains, and the motive power will be electricity.

The Electrical confreres may congratulate themselves on the prospect of a coming golden harvest.



AN INSIGHT INTO THE NATURE OF MATTER BY THE AID OF ELECTRICITY.

ALEXANDER J. WURTS.

There are three familiar states of matter—the solid, the liquid and the gaseous. There is also a fourth state called “radiant matter.”

All matter is supposed to consist of minute particles called molecules. It has been calculated that if a drop of water could be magnified to the size of the earth, one of its molecules would appear about as large as a pea. All molecules are supposed to be in constant vibratory motion. Molecular motion is called heat; the more rapid the motion, the greater the heat. If a molecule moves more rapidly at one time than another, it will also move further; and if further, it must have or occupy more space. This explains the phenomena of expansion due to an increase of temperature. Steam is an excellent example of expansion due to heat; its molecules occupy so much space by their extended motion that it is possible to look in between them; consequently steam is invisible.

In the solid state molecules are held together by a force of attraction, in such a way that although they are free to vibrate, it is impossible for them to move about among themselves. The force of attraction between molecules in the solid state is so great that it is difficult to separate them. If we break a stone we separate some of its molecules, but great force is required to do this.

In the liquid state the force of attraction is nearly counterbalanced by a force of repulsion and the molecules are readily moved about among themselves. For example: if we insert our hand into a pail of water, the molecules are readily stirred and moved about; but if we withdraw the hand from the water some of the water will adhere to the hand, showing that there is still a slight force of attraction existing between the molecules.

If, now, we heat the water to the boiling point, strong repulsion is the characteristic feature and the molecules tend to

fly apart as far as possible. This is the state of affairs in every gas, that is, the molecules are driven so far apart that their mass becomes invisible. However, we need not stop here for we can still further separate those molecules: suppose we take a large glass vessel full of air and heat it, we shall have driven the molecules as far apart as possible, under ordinary circumstances; but if we now apply an air pump to the vessel, we can withdraw some of the molecules, in fact, we can withdraw the greater portion of them, so that now the molecules, compared with their diameters, will be widely separated.

In the solid state it is very certain that the molecules could only be moved with great difficulty. In the liquid state the molecules are much more easily moved; but if a single one could be shot, as from a gun, it would not travel a distance equal to its own diameter, before striking many other molecules and so be at once brought to rest. In the gaseous state, molecules are more easily moved than in the liquid state and there being fewer of them in a given space, it might be thought that now a molecule could be shot with better success. But no, the molecules are still too many and close together to permit of one being driven through the mass without at once colliding with many others. But if most of these molecules are removed, as we have imagined done, from the glass vessel, by the production of an almost perfect vacuum, a state of matter will finally be attained in which it will be found possible to project a molecule some distance, even all the way across the vessel without

coming in contact with any other molecule. This state of matter is called "radiant matter." It was discovered and investigated by Professor Crookes, through the agency of electricity. If the terminals of an induction coil are brought, one to either side of this highly exhausted vessel, the air molecules in it will be driven from the negative to the positive pole; in fact, a regular bombardment will take place; that is, a continuous stream of molecules can be sent from one side of the vessel to the other.

Now, as these molecules are matter and since they possess inertia, we should expect to obtain results with them similar to those obtained with ordinary projectiles when set in motion; and this is, in fact, found to be the case. If we shoot a cannon-ball against an iron target, the target will become warm; similarly, the molecules shot against the glass walls of the vessel, will heat the glass. In like manner the following and many other instructive experiments have been performed. If a target be hinged to the bottom of the vessel, it can be knocked over by a bombardment of molecules. If a little fan wheel be set up in the vessel, it can be set in rapid rotation by shooting molecules at the vanes. Molecules, thus projected under the influence of an electric current move in straight lines, but can be deflected from their course by a magnet. Any solid matter set up in their path will arrest their progress.

Thus by the aid of electricity, a fourth state of matter has been discovered and a deeper insight into the nature of matter obtained than ever before.



The Telephone.

The Mexican Telephone and Telegraph Company have just received new concessions from their Government, which gives the corporation a practical monopoly for twelve years.

The "Bell Telephone Claim" for \$7,016,098 has been satisfactorily adjusted. The bills payable in Mexico amounting to \$8,800 have been settled; the entire debt of Company having been liquidated—it starts the new year without debts and with quite a surplus in the treasury.

The company will begin to put in new iron poles in some of the streets in Mexico, with aerial cables with 100 wires in a cable. All told they will have 160 poles. They will put in iron poles instead of wooden, costing much less.

It is estimated that by adding \$500 more per month operating expense, the cost of improvements will be liquidated.

Electricity in the Colleges.

The Trustees of the University of Pennsylvania have decided to light the buildings throughout with electricity. The electric lighting will be in the alternate and direct current systems. Two 500-light alternating and four 500-light current dynamos are to be employed. The alternating dynamos will be connected to a switchboard, and will be run either singly or in parallel, or by motor. The direct current machine will be compounded, but by throwing a switch, they may become shunt machines. Students will be enabled to handle the entire apparatus, thus giving them a practical knowledge of the details and peculiarities of some of the most popular American manufacturers.

It is believed that when this plant is established, the University of Pennsyl-

vania will stand in the front rank of educational institutions, in facilities for instruction in the electrical branch, and when added to this important departure, the phonographs shall be placed in the laboratories and lecture rooms, in order that the students may familiarize themselves with the wonderful properties of this sound recorder, the completeness of equipment will be materially enlarged.

New York not only a Commercial Centre but a Focus of Learning.

It seems to be now generally conceded that New York has become a focus to which rays of learning gravitate. As drops of water scattered over a considerable surface are attracted to each other and soon melt into one common mass, so the discoveries, the achievements in art, science, mechanisms,—in fine, all kinds of knowledge here find a point of meeting. New York therefore is the Mecca of the scientific, artistic and literary world of America. Scarce a week passes that is not marked by the assembling of the troops of this noble army.

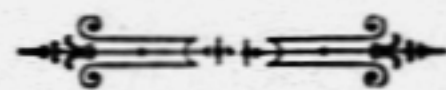
THERE will be an annex building provided for the exhibition of the dynamos, generators, etc., at the Columbian Exposition; each exhibitor erecting a small wooden station approved by the electric engineer, Mr. Sargent.

The rest of the electric exhibition will be placed in the Electricity Building and the two buildings connected by a subway six feet in diameter.

The manufacturers of dynamos will be enabled to meet competition by exhibiting their apparatus under the best conditions, and will probably be awarded contracts for lighting the grounds and buildings.

Electric lights are to be placed in the grounds at once in order to aid the workmen if they desire to work at night.

A circular letter has been issued giving information concerning work done thus far, and outlining the steps to be taken by exhibitors.





A NEW TYPEWRITER.

The Bar-Lock typewriter, which has just been placed before the American public, is an advance upon any writing machine yet produced in the essential requirements of a modern typewriter.

It comes into the market thoroughly tested, with every feature developed and purged of every defect the closest scrutiny could discover.

It is the invention of Mr. Charles Spiro, of New York, and the basis of its construction was to secure an inherent speed beyond the dexterity of any operator, not alone in the arrangement of its printing mechanism, but also in the provision of automatic means for accomplishing many of the operations required in the use of typewriters.

The Bar-Lock typewriter derives its name from a segment of phosphor-bronze pins around the printing point so arranged that each type bar passes between two of the pins while imprinting, thus locking the bar against any side play. The joint of the bar secures it against any end play, so that it is completely locked during the act of imprinting, thus securing absolute and complete alignment, free from the clogging influence of ink or dust. The Bar-Lock

secures another important advantage inasmuch as it allows the use of resilient type bars, so that should an operator, by accident or design, strike two or more keys simultaneously, the bars will yield aside temporarily by reason of their elasticity, neither one printing and not the slightest damage being done. When rigid type bars are used, the force of the stroke on two or more keys causes a collision of the corresponding bars, straining their joints and disturbing their alignment.

The writing done on the Bar-Lock is at all times visible without lifting the carriage, shifting aside the ribbon, or exerting any other effort.

The type bar and hanger joint on this machine differ from similar devices on other machines, in a very important particular. In this hanger, a ball and socket mechanism is employed so that when the parts are together and in place on the machine, the bar will have perfect freedom in its printing and return motions.

The keyboard of the Bar-Lock contains single keys for capitals, small letters, numerals and punctuation marks divided into two banks, each having

three rows, one representing capitals, and the other small letters, thus saving the time and labor required to shift for capitals.

The ribbon movement on this machine is another important innovation. It carries the ribbon over the printing point on the depression of any key, and then immediately retreats to give a full view of the letter just printed, feeding the ribbon along a space. The spools with the ribbon are instantly detachable, from the machine, and another ribbon as quickly adjusted, without the rewinding necessary on other typewriters.



This is the only writing machine that automatically reverses its ribbon feed at each end of the ribbon, so that the operator need not give any care whatever to the ribbon from the time that it is put on the machine until it is worn out.

The carriage of the Bar-Lock is the most convenient, easiest controlled, rapid and lightest ever produced.

The No. 2 Bar-Lock accommodates paper nine inches wide and writes a line eight inches long, while the No. 3 writes a line $13\frac{1}{2}$ inches long, and accommodates paper 14 inches wide.

The type of the Bar-Lock can be cleaned with an ordinary brush, within a few seconds, more conveniently and thoroughly than those of any other machine, not excepting those having special devices, for the purpose. The typewriter is made entirely of metal

and contains the best material and workmanship, and all the parts are made interchangeable.

The Bar-Lock is believed to be the neatest in design and the most compact and serviceable typewriter ever produced, and its manufacturers invite comparison and a test of its advantages side by side with typewriting machines of any other make whatever.

Curious Features of the Modern Phonograph.

One of the remarkable features in the phonograph is the difference made in the key of the voice by an increase or decrease in the velocity of the cylinder. If the latter is turned as fast in transmitting the voice, as it is in receiving, the tone is reproduced with almost mathematical fidelity. If, however, the cylinder is turned more slowly, the voice is reproduced in a much lower tone. On the other hand, if the mechanism is moved more rapidly the voice is in a much higher key. This curious fact enables a person to hear himself speak as if he had been endowed with different vocal organs.

A contralto, for example, who sings a song into the apparatus in her usual style, may hear it reproduced as she gave it, or, by changing the speed of the motor, as a soprano, high treble, or, on the other hand, as a basso, baritone, or even basso profundo. Strange to say, the quality of the voice, which the French call *Timbre*, remains unchanged, no matter how rapidly or slowly the cylinder is revolved.



Phono-Chat.

THE Rev. Mr. Holbrook, of Sackett's Harbor, visited Mr. Seaver's phonograph not long since and left two verses of the "Sweet Bye and Bye" on one of the wax cylinders. The voices were clear and distinct.

Messrs. William H. Ashwell, G. N. Scott and Harry L. Thompson have incorporated the Mound City Automatic Phonograph Co., in East St. Louis, with a capital of \$100,000, to buy, sell or rent the Edison phonographs.

THE Columbia Phonograph Company, Washington, D. C., have just declared their fifth dividend. We are glad to note that these dividends are coming closer together because it certainly bespeaks great enterprise and business activity.

THERE are several colleges in the United States specially devoted to the education of civil and mechanical engineering; some of them give actual "shop practice." The time is not far distant when the phonograph will be also introduced as a means of educating in the proper pronunciation of speech.

LINO-TYPE AND PHONOGRAPH.—In Montreal a test of the application of the phonograph and lino-type is about to be made by Messrs. Holland, it being their intention to dictate the official report of the Senate debates to a phonograph rather than to a typewriter, and have the phonograph repeat the words to the operator of the type-setting machine at the Printing Bureau.

THE phonograph is coming into use in medical science. With this instrument the voice sounds of a patient can be recorded in health and disease, for the purposes of comparison, and sounds connected with diseases of the respiratory tract can be preserved for careful examination. We think that a record of sounds produced in whooping cough, asthma, croup and diphtheria would be of great value.

MR. EDISON'S trip to Chicago recently while connected with the Local Edison Illuminating Co., also took in electrical matters connected with the World's Fair. He expressed himself very much pleased with the vigorous manner in which Professor Barrett is pushing forward the work. Mr. Edison is decidedly in favor of a United Electrical Exhibit. He spent some time with Professor Barrett and Mr. Frederick Sargent, the electrical engineer of the Construction Department.

The Phonographic Republic.

As public opinion is, after all other tribunals, the "court of last resort" in the United States, it is in order for the PHONOGRAM to say a few words upon the subject of the divergent policy of the various phonograph companies, regarding the proper measures for placing these instruments before the public.

THE PHONOGRAM represents simply the views of one class. But in the Convention just held in New York, by the delegates accredited by the various companies there has occurred a summing up of thought that will constitute the law by which the Phonographic republic is henceforth to be guided. There is no reason for a clash.

The musical and the business phonograph were invented to subserve distinct though diverse objects. Each agrees to travel its own path and the success of one is not prejudicial to the interests of the other.

Why should a curb be placed upon one and the other allowed full liberty? We are enthusiastic when commenting upon the merits of the business phonograph, because its uses are so varied and valuable; as the great genius, General Von Moltke says—"it is a great instrument."

MR. J. K. SEAVER, who recently paid us a visit, has been for the past two years exhibiting the phonograph in many of the towns and villages in New York State, and doing a lucrative business. He is, without doubt, one of the best exhibitors in the business; and may his kind increase. He has many interesting incidents to relate in connection with his trips. Among others, during a recent visit to Watertown, N. Y., while operating the phonograph in Schuyler's store, some members of the family of Col. A. D. Shaw, entered with some phonograph cylinders which they had received from friends in England, and which they had never had occasion to use. The tubes were placed on the instrument and they had the pleasure of hearing messages from friends 3,000 miles across the sea. The speakers were the Rev. Guy Mark Pierce, an eminent and eloquent Methodist divine of London, and the Misses Goelock, well-known among philanthropic people of England. Wonderful is the phonograph.

SPLENDID TRIBUTES TO THE PHONOGRAPH.

VOICED BY THE PRACTICAL MEN OF AMERICA.

AFTER THESE WHO CAN DOUBT?

No. 104½ BROADWAY,
ST. LOUIS, MO., June 8, 1891.

J. C. WOOD, Esq.

Gen'l Mgr. of the Missouri Phonograph
Company.

Dear Sir:—I have been using the Phonograph in transcribing my work since the 15th day of November, 1890, and from that time to this have been in continuous use of the machine, transcribing by its means many thousands of pages of record.

I began the use of the Phonograph with some misgiving as to its efficiency and practical advantage, but a short time only was necessary to convince me not only of its practicability but its absolute necessity in my work. My business requires me to take shorthand notes constantly from morning till night, and now and then after others have ceased their labor. Such labor is very exhausting, and I therefore gladly seized upon the means thus presented to lighten my burdens. I find that I can discharge my work with one-half the expenditure of vital energy that I found necessary in the employment of a stenographic amanuensis. I think now to resume the old method would be to take a step backward. Several parties have been induced to use the Phonograph by seeing its efficient work in my office. I look in the near future, to see the Phonograph in as common use as the typewriting machine, which is its natural ally in the field of intellectual labor. This change perhaps will not come at once, but it will come eventually, beyond all doubt.

Yours very truly,

FRANK E. NEVINS,

Official Stenographer Circuit Court, St. Louis,
Mo.

J. H. MCGOWAN,
Attorney, McGowan Bldg,
WASHINGTON, D. C., May 23, 1891.

E. D. EASTON, Esq.,

President, etc., 627 E Street, City.

Dear Sir:—Your letter asking me to give my experience with the Phonograph, came to hand at a time when I was too busy to immediately respond. I now gladly answer your inquiries.

The first machine I had from you was the one that I ran with a treadle. It lacked certain improvements which I find on the machines which I now use. It was not satisfactory and I returned it. In fact, I had about made up my mind that I wanted nothing to do with the Phonograph. But I yielded to the persuasive words of your secretary, and tried the new machine—run with a storage battery. I found that it accurately recorded whatever I spoke into it. My typewriter had no difficulty in transcribing anything that was fairly dictated. In a word, the machine was satisfactory and in every way, with a single exception, a splendid substitute for a stenographer. The exception consisted in the fact that it could not walk. I am a nervous man. (This bit of personal information you will treat as confidential!) I could not go on with my work while the typewriter was transcribing in the same office. The machine was too heavy to be moved back and forth, and, as I said, the thing couldn't walk. I thought I was not able to rent two machines, so I concluded to give it up and go on dictating to the "Smith Premier" as I had been doing. A notice of my conclusion brought down upon me again that most potent secretary, (may his kind increase), and to-day I have a machine let into the top of my desk, into whose tireless anatomy I talk all, or nearly all of my letters, briefs, memoranda, etc., and a machine in the adjoining room, where the cylinders are transcribed.

How do I work it? I close the door leading to the outer office, usually, so that I may be free from the disturbing influence of another human presence. And, really, this opportunity to be entirely alone when one dictates, I consider one of the great advantages of the Phonograph. I am of the opinion that any person is more or less disturbed in his mental processes by the simple presence of another. Nervous people, and a class of people of peculiar make-up, cannot do mental work except when wholly by themselves. I belong to one of these divisions of the human family, hence I close my door. Then take up the subject to be "dictated" about. If it is a letter, the mere reading of it is sufficient, usually, to formulate in my mind the

answer. If a more important paper is to be made, I gather my material and make such a personal study of the subject as is necessary to fix in my mind about what is to be said. If the matter is to be treated at some length and under more than one head, I usually make brief notes. Then, when I am ready, with the letter to be answered or the notes of heads in my hand, I set the machine to going, and, like the Quaker when the barn door blew down on him, I "express myself."

With the Phonograph, I believe it is safe to say, a professional or business man can do one-fourth more work with the same expenditure of physical and mental strength, than he could do without it.

I have no trouble whatever with my two machines. The company sees to the changing of the batteries as frequently as necessary, and keep the machines oiled and cleaned.

What I have said in this hasty reply is not put down as orderly as it might be, but from it, *taking it by the four corners*, you will gather my opinion of the Phonograph.

Very truly yours,

J. H. MCGOWAN.

Dictated to and transcribed from the Phonograph.

Office of THOS. W. SMITH,
Wholesale and Retail Dealer in Lumber.
First Street and Indiana Ave.,
WASHINGTON, D. C., April 16, 1891.
E. D. EASTON, Esq.,
Pres't. Columbia Phono. Co., Washington,
D. C.

Dear Sir:—In answer to your letter of the 14th inst., I beg to state that I am now using the Phonograph right along in my business, the same as if I had a stenographer at my desk. I have two machines, one for dictation and the other for transcribing.

When the machine was first in my office, I used it as a plaything for quite a while. In fact it was about six months before I did anything in the shape of business on it.

The principal difficulty found was, that if I happened to be dictating a letter and some person interrupted me, it was difficult again to obtain the thread of thought. When the mechanical contrivance which was invented by Edison, was explained to me by which I could obtain the last few words or the last ideas which were spoken into the machine, I found very little difficulty in dictating all I wanted to say, and in

obtaining after interruption the thread of thought which was broken.

I am now using the machine daily, and almost hourly and find it very convenient. In fact, at the present time, I cannot do without it unless I employ a stenographer.

I have gotten over the play period and instead of being a pleasure making instrument it has proved a great business helper.

I have no hesitation in recommending it to the business community, and am satisfied that when they once get down to work on it, and understand its qualities, they will never give it up until something better is invented.

Yours truly,

THOS. W. SMITH.

THE D. B. STEWART COMPANY,
General Fruit & Produce Commission Merchants,
No. 118 East Pratt Street,
BALTIMORE, MD., March 9, 1891.

MR. E. D. EASTON,

Pres't Columbia Phonograph Co.

Dear Sir:—We have one of Edison's Phonographs in our office for more than a month and would not be without it. We write from 30 to 60 letters per day and then only have the machine in use a portion of the time.

Yours very respectfully,

D. B. STEWART CO.

Per D. B. Stewart, Pres't.

Dictated to and transcribed from the Phonograph.

HELENA, MONT.

THE PHONOGRAM:

I read the PHONOGRAM with perhaps more interest than any other publication. Although I am out of the phonograph business now, I am still very much interested in it, and expect at some future time to be in the business again.

Wishing the PHONOGRAM and its manager great success, I am,

Very respectfully,

G. W. WALTERS.

Professor Charles G. Walcott, United States Geological Survey, who has been using talking machines for nearly two years, says under date of April 24:

I use them for all kinds of dictation, both correspondence and in the preparation of manuscript relating to scientific matters. I find the instrument to be quite as reliable as any stenographer that I have ever employed and it fully meets the requirements made of it. It saves

time and it is always at hand ready for work at a moment's notice. As a money saver it is a success. In connection with an expert typewriter it takes the place of a stenographer, the cost of the two phonographs and the typewriter not equaling the salary of a fairly good stenographer.

As a whole, I consider it a great addition to my facilities for work and a decided success.

Photographing In the Dark.

"It seems as if nothing could be more delightfully interesting" says the *Sun*, "than to spend a couple of hours with Edison in his laboratory when he is in an entertaining mood. He is truly a wonderful man. If he chooses to talk, he fascinates one with the brilliancy and the daring of his undertakings. His schemes are numbered by the hundred, and there is no problem great enough to daunt him. He seems to have ceased working to increase his fortune, and now pursues the labor of invention purely for his personal amusement. Electricity is, of course, his greatest plaything and he makes it appear sometimes that the 'subtle and imponderable agent,' is his abject slave. Lately Edison has begun to interest himself with photography. One result of his investigation in that line is the Kinetograph. But he does not stop there. He wants to invent a machine which will photograph in the dark, and he is working now on a scheme for such a machine. 'It seems to me,' he says, 'that it ought to be possible to take photographs by a heat radiant instead of the light radiant now used. May be I can't do it, but I'm trying. I've succeeded in getting a plate that was sensitive to heat.' In view of the wonders he has done who will dare say he will not do this?"

Authors AND Publishers.

There are few subjects which women's imagination cannot illumine—and nature's potential and apparently uncontrollable elements are sometimes forced to do her bidding. Mrs. J. E. H. Gordon has undertaken the task of making electricity serve the purposes of ornamentation in houses. Her own admirable book illustrating her ideas in that line, will show better than any description we might give how to beautify homes in this way. This book is sent postage free on receipt of \$3.75 by the *Electrical Engineer*, 150 Broadway, New York.

We receive each week the excellent periodical published by Mr. D. L. Scott-Browne, who is also the author of the admirable system of stenography taught and practiced in so many states of the Union. The large and intelligent fraternity of stenographers throughout the country owe to Mr. Scott-Browne a debt of gratitude for devising a plan that renders their labors so much less onerous and its results so much more satisfactory.

Although the mind is lifted to wonder and awe, while it follows the movements of the philosophers in laying bare the secret of Nature's occult forces and applying them to the wants of man, by the aid of complicated machinery and tedious processes of thought, the brain is often weary in contemplating subjects so lofty, involving problems at once intricate and puzzling. In such circumstances a diversion into other paths of science becomes acceptable and conducive to the healthful condition of the mental powers. It was, therefore, with a certain sense of relief that we turned from the mountainous and awe-inspiring regions of study where you read of electric motors that convey a train of cars along a railway at the rate of 250 miles an hour, that set a photographic instrument to work making it take forty odd pictures a second, and do duty almost as quick as thought, that wield a pen which is literally "mightier than the sword," since it can communicate ideas from one side of the world to the other in a space of time almost inappreciable, and rested our brain in perusing the accounts of ornithologists, geologists and other lovers of science, who prefer to investigate the visible and tangible forms and operations of Nature, which they lay before us in agreeable shape on the pages of the *Kansas City "Scientist."* Nothing proves more surely the upward progress of the Republic of the United States than the advances being made in scientific research and recorded in her serial literature. We commend the efforts of this and other magazines which place in the hand of the public the results of their labors in the good cause of science, and we consider the stirring and keen-eyed State of Kansas a fine field for the development of such enterprises. May the magazine in its present form continue to flourish until it is finally able to expand into ample proportions worthy the talent and energy of its founders.

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